DOCUMENT RESUME

ED 263 374 CE 042 879

AUTHOR	Chan, Mike
TITLE	Fish Facts. Lesson Plan.
INSTITUTION	Hawaii Univ., Manoa. Western Curriculum Coordination Center.
PUB DATE	Nov 85
NOTE	37p.
PUB TYPE	Guides - Classroom Use - Guides (For Teachers) (052)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	*Audiovisual Aids; *Classroom Techniques; Continuing Education; Educational Resources; *Food; *Foods Instruction; Home Economics; Home Economics Skills; Instructional Materials; Lesson Plans; Nutrition; Postsecondary Education; Teaching Methods; Transparencies; Workshops
IDENTIFIERS	*Fishes

ABSTRACT

This lesson plan is designed for a 50-minute class to teach extension home economists and homemakers about buying, storing, and using fish. The lesson plan contains references, a list of equipment needed, objectives, and the presentation. The presentation consists of an outline of instruction coordinated with methods of instruction and aids and the amount of time to be spent on each element. Transparency masters and student handouts are included. Topics covered in the lesson plan include fish quality, recognizing and buying good quality fish, storing fish, and the benefits of fish in the diet. (KC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED263374

LESSON PLAN

LESSON PLAN NO. 10	NAME: College of Tropical Agriculture & Human Resources, University of Hawaii.	PAGE 1 OF 19 PAGES

COURSE OF INSTRUCTION AND COURSE NUMBER:	TOTAL HOURS:	LESSON TITLE:
Fish Quality Seminar to extension home economists and housewives.	50 mins.	" FISH FACTS "

DAY AND DATE OF INSTRUCTION:	HOURS	PLACE:
11/22/85	6.30-7.20 P.M.	Nist Annex #1 , U.H. Manoa

NO. OF STUDENTS:	REHEARSAL:	INSTRUCTOR AND ASSISTANTS:	STUDENT MATERIAL AND DRESS:
14	Holmes Hall #243 U.H. 11/20/85.	Mike Chan (Principal Instructor) Mario Katosang (Assistant) Published by W.C.C.C. University of Hawaii	Handouts

REFERENCES:

1. Esbach, C.E. and Hayes, K.M. " Fish and Shellfish for your table." Cooperative Extension Service, University of Hawaii. Circular 430. p.3-14. 1968
2. Pirsch, S. " Fish in diet lowers fat intake." MAKAI Vol.4 No.4. p.3 April 1982.
3. Anon " Seafood of the month : Taape" MAKAI Vol.3 No.6. p.4. June, 1980.
4. National Institute for the Foodservice Industry "Applied Foodservice Sanitation." Chicago, Illinois. p.21. 1978

EQUIPMENT AND AUDIO-VISUAL AIDS:

Overhead projector
Projection screen
Color marking pen
Pointer
3-prong plug
Extension cord
Blackboard and chalk
Fresh fish (packaged) : Good quality
Fresh fish (packaged) : Poor quality

OBJECTIVES:

At the end of the seminar, the student will :

1. Name the important indicators determining the freshness of fish.
2. Name the different forms of fresh and frozen fish.
3. List the approximate yields from the different forms of fish and shellfish.
4. List the main ways fish lose their freshness.

SPECIAL REMARKS:

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

✓ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

L Zane

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

PRESENTATION

OUTLINE OF INSTRUCTION	TIME	METHODS OF INSTRUCTION AND AIDS
Introduction. 1. This fish quality seminar will teach ways to select, store and thaw fish. 2. By being able to recognize indicators of good quality when purchasing fish and shellfish, the consumer is able to make better selections at the retail counter. 3. A fish diet is beneficial for dieters, and persons with high cholesterol or high blood pressure.	3 min.	" SIGN OF QUALITY " transparency : Fresh Fish * Whole Fish * Cut Fish
FRESH FISH When buying fresh fish, check to see if : 1. Flesh is firm and elastic, and not separating from the bones. Fish fillets should have a fresh-cut appearance and color. (As the fish gets older, the flesh become soft and slimy, and slip away from the bones). 2. Eyes are bright, clear, transparent, full and protruding. (As fish gets older, the eyes become cloudy and often turn pink). 3. Gills should be red, and free from slime. (As fish gets older, the gills change color, fading gradually to a light pink, then grey, and eventually brown and greenish). 4. Skin is shiny, and with bright color. (As fish gets older, the skin markings and color characteristic of the species become less distinct.) 5. Odor should be fresh, not fishy and objectionable. Question : What are the 5 indicators determining the freshness of fish ? Answer : 1) Flesh 2) Eyes 3) Gills 4) Skin and 5) Odor.		Ask the students to list the quality indicators for freshness.

PRESENTATION

OUTLINE OF INSTRUCTION	TIME	METHODS OF INSTRUCTION AND AIDS
FROZEN FISH When buying frozen fish, check to see that the : 1. Flesh is solidly frozen. (Is fish held at zero degree F ? Has it been thawed and refrozen ?) Flesh should have no discoloration or white cottony appearance. 2. Odor is not evident, or very slight. 3. Wrapping which fish is packaged should be moisture-vapor proof. There should be little air space between fish and wrapping. Aluminum foil provides a good seal. Also plastic freezer bags. 4. Glazing of ice would protect whole or dressed fish from drying out. It acts as a coating of ice covering surface of fish. SHELLFISH When buying shellfish, check to see that : 1. Clams and oysters in the shell are alive. Shell should close tightly when tapped. 2. Fresh shrimp meat is firm in texture, and has a fresh, mild odor. 3. Scallops should have sweetish odor, and free of excess fluid in the package. Q. : What should you check when buying frozen fish ? A. : 1) Condition of the flesh 2) Odor 3) Wrapping 4) Glazing.		"SIGN OF QUALITY" transparency * Frozen Fish * Shellfish Ask student to list what he/she would check when buying frozen fish ?

PRESENTATION

OUTLINE OF INSTRUCTION	TIME	METHODS OF INSTRUCTION AND AIDS

FORMS OF FRESH AND FROZEN FISH

1. Whole or Round : Marketed as it comes from the water. Need to be scaled and eviscerated, with head, tail and fins removed. Edible portion about 45%.

2. Drawn : Generally scaled with entrails removed. Edible part 48%.

3. Dressed : Scaled and eviscerated, with head, tail and fins removed. Edible part 67%.

4. Steaks : Cross-section slices of larger size dressed fish. Edible part 86%.

5. Fillets : The side of the fish cut away from the backbone.Boneless.

6. Fish Sticks or Portions : Pieces of fish cut from frozen blocks into portions of uniform size.

Q. : What are the 6 major forms of fish ?

A. : 1) Whole or Round 2)Drawn 3) Dressed 4) Steak 5) Fillet 6) Fish Sticks or Portions.

" FORMS OF FRESH AND FROZEN FISH " transparency.

* Whole or Round
* Drawn
* Dressed
* Steak
* Fillet
* Fish Sticks and Portions

EDIBLE PORTIONS OF FISH

	Edible Percent
Whole or Round	43-47
Drawn (eviscerated only)	46-50
Dressedevis., no head or fin)	65-69
Steak	84-88
Fillet	100

" EDIBLE PORTION OF FISH " transparency.

Q. : What is the percent yield for whole fish and fillet ?

A. : Whole fish about 45%, fillet 100%.

Ask student what is percent yield for whole fish and fillet.

PRESENTATION

OUTLINE OF INSTRUCTION	TIME	METHODS OF INSTRUCTION AND AIDS

SHELLFISH

	Edible Percent
Oysters (in shell)	8-11
Clams,hard (in shell)	14-20
Shrimp (headless, raw)	50-60
Lobster (cooked in shell)	35-37
Crab, hard (in shell)	10-18

Q. : What is the percent yield for oysters (with shell) and shrimp (headless, raw) ?

A. : For oysters about 10%, and shrimp about 55%.

GRADES OF FISH

There are no Federal standards or grades for fresh fish. But there are official standards for some frozen and precooked fish items : e.g. fish sticks, fish portions, raw breaded shrimp, and different fish fillets and steaks.

The four U.S. grades are :

1. U.S. Grade A : a frozen product that has good flavor and odor, AND RATES HIGH IN SPECIFIC FACTORS, SUCH AS COLOR of flesh, dehydration, and freedom from blemishes. (Wisest choice is U.S. Grade A.)

2. U.S. Grade B : Product has reasonably good flavor and odor, and rates reasonably high in the other quality factors.

" EDIBLE PORTION OF FISH" transparency (continued)

* Oyster
* Clam
* Shrimp
* Lobster
* Crab

Ask student what is percent yield for oyster and shrimp

PRESENTATION

OUTLINE OF INSTRUCTION	TIME	METHODS OF INSTRUCTION AND AIDS
3. U.S. Grade C : (apply to only frozen, raw, headless shrimp) Flavor and odor reasonably good, but rating for other factors lower than that for Grade B. 4. Substandard : Quality fails to come up to requirements of U.S. Grade B or C. Q. : What are the 4 U.S. grades for some frozen fishery items ? A. : U.S. Grades A,B, C and Substandard. HANDLING AND STORAGE OF FISH Fish is a highly perishable product. It will spoil quickly, unless it is handled with care,and kept under refrigeration. Quality is easily lost in fresh and frozen fish in these 4 ways : 1. Bacterial Growth: When there is poor sanitation in handling fish, and storage temperature is not lowered promptly. 2. Oxidation of the oil or fat of the fish results in rancidity. Easily recognized by yellow discoloration of skin or flesh exposed to the air. Moisture-vapor proof wrappings greatly reduce oxidation 3. Enzyme Action : Proteolytic enzyme action can be reduced when fish storage temperature is lowered, and with entrails removed. 4. Dehydration : Zero-degree storage without protective covering resulted in moisture loss and shrinkage. Texture is altered, and there is weight and flavor loss. This condition is known as "Freezer Burn ". Q. : What are the 4 ways that quality is lost in fresh and frozen fish ? A. : 1) Bacterial growth 2) Enzyme action 3) Oxidation 4)Dehydration.		" LOSS OF FISH QUALITY " transparency * Bacterial Growth * Oxidation * Enzyme Action * Dehydration Ask students to list 4 ways that quality can be lost in fresh and frozen fish.

PRESENTATION

OUTLINE OF INSTRUCTION	TIME	METHODS OF INSTRUCTION AND AIDS
STORAGE LIFE OF FROZEN FISH & SHELLFISH (0^oF)		" STORAGE LIFE OF FROZEN FISH AND FISH & SHELLFISH " transparency
Fatty Fish — Months		* Fatty Fish * Lean fish * Shellfish
Mackarel, tuna, salmon and herring etc. — 3		
Lean Fish		
Haddock, cod, swordfish etc. — 6		
Shellfish		
Oysters.clams (shucked) — 3-4 Lobster and crabs (meat) — 2 Shrimp — 6		
Q.: What is the storage life of fatty and lean frozen fish ? A. : Fatty fish 3 months, lean fish 6 months.		What is storage life of fatty vs. lean fish.
TEMPERATURE AND KEEPING QUALITY		" TEMPERATURE AND KEEPING QUALITY " transparency.
Fresh Fish held at — **Will spoil in (Days)** 32^oF — 15 42^oF — 5 52^oF — 3		
To keep fish fresh, hold it below 40^oF (better still $30-32^oF$).		
Q. : How many days will fresh fish spoil when stored at 52^o, 42^o and 32^oF ?		Ask students how many days will fish spoil when stored at 52^o, 42^o and 32^oF.
A. : At 52^oF 3 days, 5 days at 42^o, and 15 days at 32^oF.		

PRESENTATION

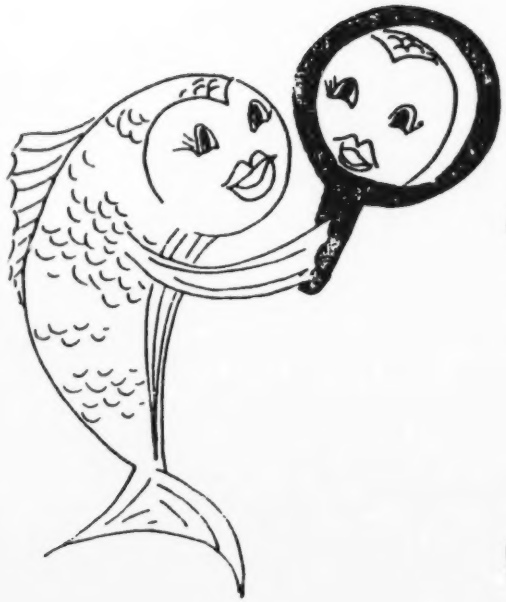
OUTLINE OF INSTRUCTION	TIME	METHODS OF INSTRUCTION AND AIDS
METHODS OF THAWING FISH 1. At Refrigerator Temperature : Recommended temperature for thawing is from 40-45°F. Thaw overnight. 2. Using Cold Running Water : Quickest way to thaw whole or drawn fish. Leave filletor fish steaks in the package while they are being thawed. It takes about half-hour to thaw fillets and steaks in cold water. 3. At Room Temperature : Not recommended for thawing, though often used. The thinner part like the tail would thaw faster. If the thawing period is too long, spoilage can start in the thawed area. A package of fillets take about 3-4 hours to thaw. Q. : What are the 3 methods of thawing fish ? A. : They are : 1) At refrigerator temperature. 2) Using cold running water. 3) At room temperature.		" METHOD OF THAWING FISH " transparency * Refrigerator temperature * Cold running water * Room temperature Ask students to list 3 methods of thawing frozen fish.

PRESENTATION

OUTLINE OF INSTRUCTION	TIME	METHODS OF INSTRUCTION AND AIDS
NUTRITIVE VALUE OF FISH		
Fish is a good source of protein, minerals, vitamins and fat.		
Protein : Excellent source of very good and easily digestable protein. Four ozs. of fish will provide one-third of the daily protein requirement.		"PROTEIN & FAT CONTENT IN SOME HAWAIIAN FISH " transparency
Q. : How many ounces of fish will provide daily protein requirement ?		
A. : Four ozs. of fish will provide 1/3 daily protein requirement.		
Vitamins : Fatty fish like mackarel, salmon, tuna and herring are high in vitamin A and D. Both fat and lean fish contain some B vitamins. Fish meets the vitamin needs of the body for growth and maintenance.		
Q. : What vitamins are found in fatty fish ?		Ask students what vitamins are found in fatty fish.
A.: Vitamins A, D and some B.		
Minerals : Mineral content of fish is quite similar to that of beef, except that fish provide more iodine and trace minerals such as cobalt and zinc. Other minerals found in fish and shellfish are copper, iron, magnesium and phosphorus. Canned fish (salmon and sardines) which bone can be eaten are excellent sources of calcium.		
Q. : What major minerals does fish provide ?		Ask students what minerals does fish provide.
A. : Iodine, phosphorus, copper, iron and magnesium, and trace minerals as cobalt and zinc.		
Fat : All fish oil are rich in vitamin D. It is mostly unsaturated fat, which is beneficial for the heart. The fat in fish is much lower than that of animals.	45 min	"COMPARISION OF DIFFERENT FOOD ITEMS" transparency.
Q.: What type of fat is mostly found in fish ?		Ask student what type of fat is mostly found in fish.
A. : Mostly unsaturated fat.		
SUMMARY	5 min	
After this seminar, one should be able to list the quality indicators for the freshness of fish, their different forms and yields. Proper methodsfor selection, storage and thawing. Fish furnish essential nutrients, and is highly beneficial for health.		

SIGN OF QUALITY

WHOLE FISH



SKIN: SHINY, BRIGHT COLORS
FLESH: FIRM, ELASTIC, ATTACHED TO BONES
EYES: BRIGHT, CLEAR, FULL
GILLS: RED, FREE FROM SLIME
ODOR: FRESH, NOT STRONG

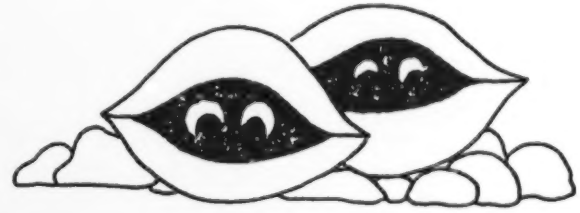
CUT FISH

FLESH: LOOKS FRESHLY CUT,
FIRM, MOIST
NO BROWNING AT EDGES

WHEN BUYING FROZEN FISH, CHECK IF:

FLESH is solidly frozen.
ODOR is not evident or very slight.
WRAPPING fish is packaged in is moisture - vapor - proof.
GLAZING of ice (to protect frozen whole fish or shrimp)

WHEN BUYING SHELLFISH, CHECK IF:

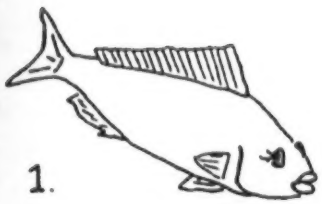


CLAMS & OYSTERS in the shell are alive.
Shells close tightly when tapped.

WHEN BUYING FRESH SHRIMP, CHECK IF THEY:

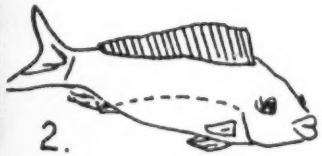
HAVE A MILD ODOR.
HAVE MEAT FIRM IN TEXTURE.

FORMS OF FRESH & FROZEN FISH


1.

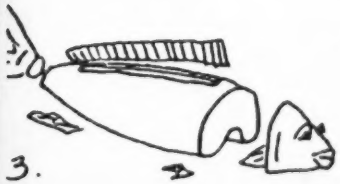
1. WHOLE OR ROUND - Fish come as is; need to be scaled and eviscerated.

2. DRAWN: Only entrails removed.


2.

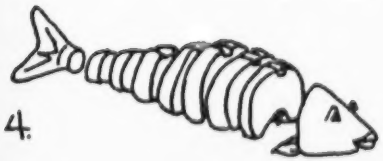
3. DRESSED: Scaled and eviscerated, usually with the head, tail, and fins removed.

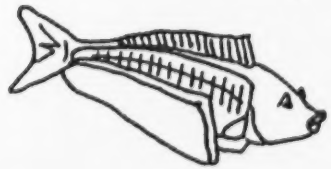
4. STEAKS: Cross-section slices of larger size dressed fish.


3.

5. FILLETS: The sides of the fish cut away from the backbone.

6. Fish Sticks and Fish Portions - Pieces of fish cut from frozen blocks of uniform size.


4.


5.

6.

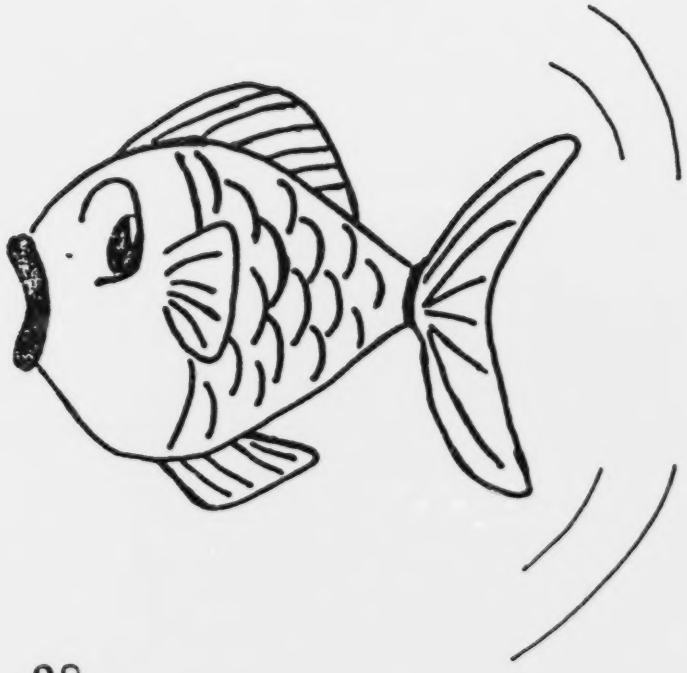
EDIBLE PORTION OF FISH:

FISH	EDIBLE PERCENTAGE
Whole or Round	43 - 47
Drawn (Eviscerated only)	46 - 50
Dressed (Eviscerated, head and fins removed)	65 - 69
Steaks	84 - 88
Fillets	100

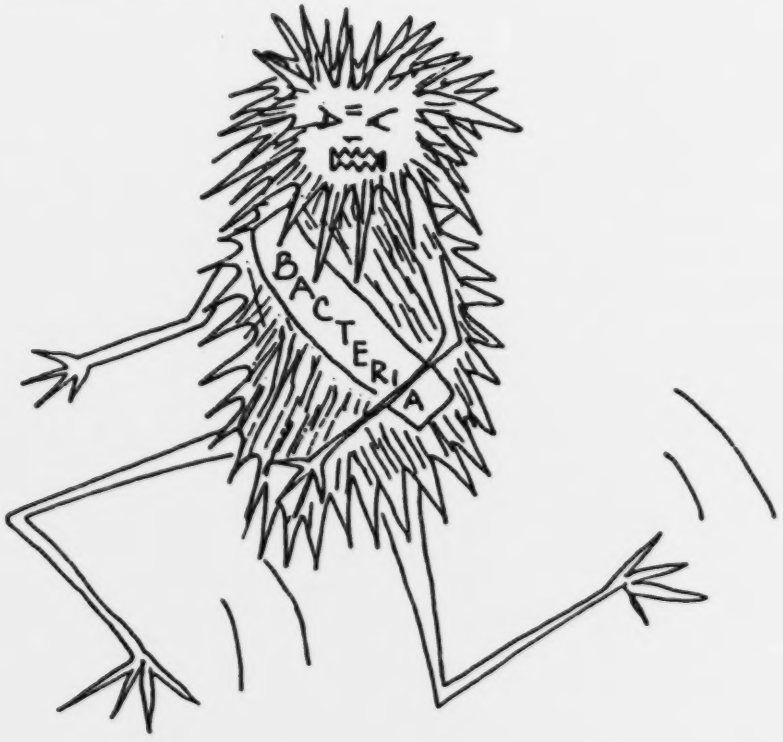
SHELLFISH	EDIBLE PERCENTAGE
Oysters (in shell)	8 - 11
Clams, hard (in shell)	14 - 20
Shrimp (Headless, raw)	50 - 60
Lobster (Cooked in shell)	35 - 37
Crabs, hard (Cooked in shell)	10 - 18

QUALITY OF FISH CAN BE LOST IN FRESH AND FROZEN FISH BY:

1. GROWTH OF BACTERIA
2. OXIDATION
3. ENZYME ACTION
4. DEHYDRATION - "FREEZER BURN"



28



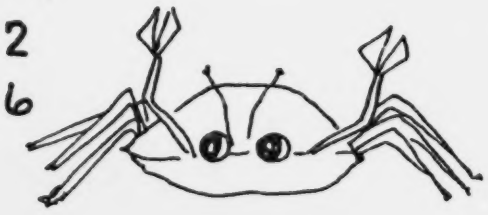
29

STORAGE LIFE OF FROZEN FISH & SHELLFISH (0° F)

FATTY FISH	MONTHS
MACKERAL, TUNA, ETC.	3

LEAN FISH	
SWORDFISH, HADDOCK, ETC.	6

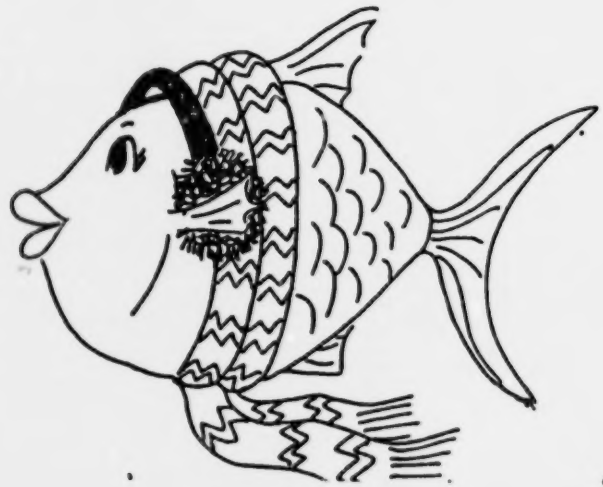
SHELLFISH	
OYSTERS, CLAMS (SHUCKED)	3-4
LOBSTERS, CRABS (MEAT)	2
SHRIMP	6



TEMPERATURE AND KEEPING QUALITY

FRESH FISH HELD AT TEMPERATURE OF:	WILL SPOIL AFTER:
32° F	15 DAYS
42° F	5 DAYS
52° F	3 DAYS

TO KEEP FISH FRESH, HOLD IT BELOW 40° F (BETTER STILL 30-32° F).



METHODS FOR THAWING FISH:

1. AT REFRIGERATOR TEMPERATURE - 40-45°F.
   OVERNIGHT THAWING

2. COLD RUNNING WATER - QUICKEST METHOD FOR THAWING WHOLE FISH. FOR FILLET OR STEAKS, THAW THEM IN PACKAGE, TAKING ABOUT 1/2 HOUR.

3. AT ROOM TEMPERATURE - NOT RECOMMENDED FOR THAWING, EVEN THOUGH OFTEN USED. ABOUT 3-4 HOURS PER PACKAGE OF FILLET.

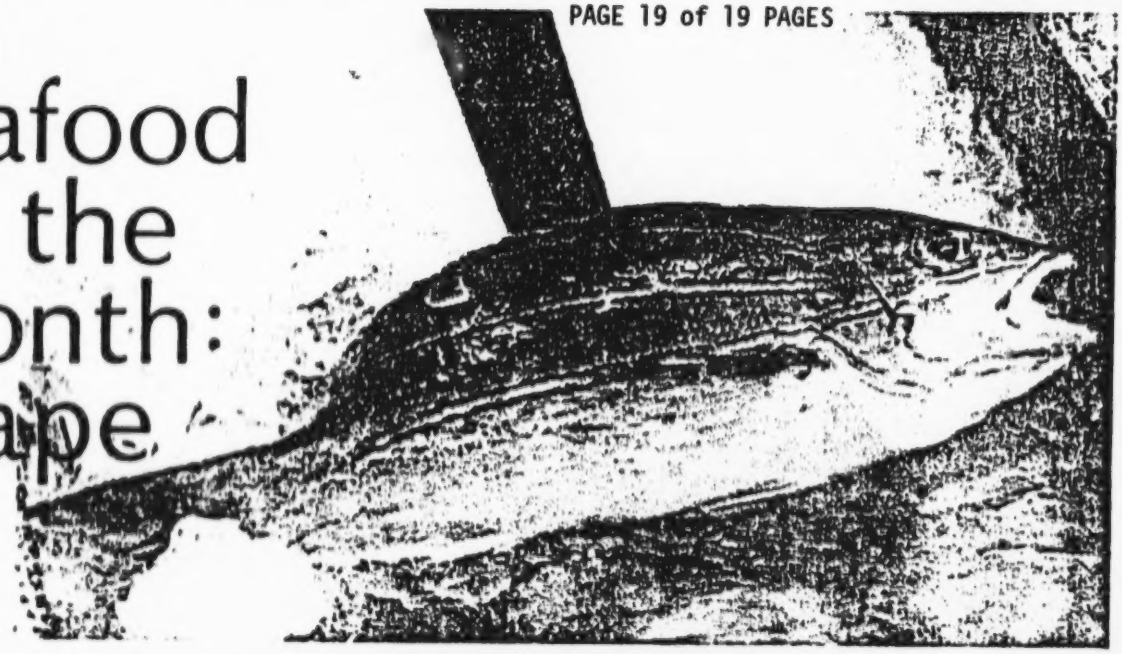
APPROXIMATE PROTEIN AND FAT CONTENT IN SOME HAWAIIAN FISHES

(per 100 grams cooked)

Fish	Protein (grams)	Fat (grams)	Calories
Ahi (bigeye tuna)	24	8	171
Ahi (bluefin tuna)	25	1	115
Aholehole (mountain bass)	22	3	120
Aku (skipjack tuna)	26	2	130
Akule (bigeye scad)	24	3	125
Albacore	26	8	190
Aweoweo (red bigeye)	21	2	111
Kahala (amberjack)	21	1	96
Kawakawa (little tuna)	26	2	129
Kumu (red goatfish)	20	4	120
Mahimahi (dolphin)	19	1	85
Manini (convict tang)	18	1	89
Moano (goatfish)	20	2	100
Mullet	21	4	122
Oio (bonefish)	23	2	111
Ono (wahoo)	24	2	125
Opakapaka (pink snapper)	22	1	102
Opelu (mackerel scad)	24	1	117
Uu (squirrelfish)	19	4	120
Weke-ula (red goatfish)	23	1	105

Adapted from *Hawaii Medical Journal* Nov.-Dec., 1953, Vol. 13, pp.144-145

Seafood of the Month: Taape



Composition of Various Food Items

	Calories per gram	% Protein	% Fat (Saturated)	Protein:Fat	$ per pound
Snapper family (Taape)	0.93	19.8	0.9	21.9:1	$ .90 - $1.70
Aku	1.45	25.2	4.1	6.1:1	$3.00
Ahi	1.33	24.7	3.0	8.2:1	$9.00
Salmon (Pink)	1.60	19.2	8.6	2.3:1	$4.90
T-Bone Steak (Trimmed)	1.97	26.4	9.2	2.8:1	$5.15
Pork (Trimmed)	1.34	19.7	4.8	4.1:1	$2.10

Note: All prices are current approximations.

Source: C.F. Church and H.N. Church, 1975, *Food Values of Portions Commonly Used*, 12th ed., J.B. Lippincott Co.

BEST COPY AVAILABLE